Tech Articles

By: Ryan Gick
www.gmtuners.com

ECM Trouble Codes - Part 2

In this issue of Fiero Focus, I would like to conclude what I started in the last issue: explaining the trouble code descriptions and defining the actions of the ECM in response to certain set codes, and whether or not it is still "safe" to drive the car. These descriptions apply to the stock 2.5 L 4-cylinders and 2.8L V6, but may also apply to other OBD-1 applications.

Code 33 – MAP Sensor Signal High (Low Vacuum Indicated). This code is set if the ECM detects a higher than normal voltage signal coming from the MAP (Manifold Absolute Pressure) sensor. The MAP sensor outputs a high voltage (near or over 4 volts) with little or no manifold vacuum detected. This code will set if the vacuum line between the MAP sensor and intake manifold is leaking or broken. This code can also set if the engine has a mechanical problem (vacuum leak, misfire, etc) causing lower than expected manifold vacuum levels (usually at idle).

ACTION TAKEN BY ECM WHEN CODE 33 SETS: The ECM will substitute a fixed MAP value and use throttle position to control fuel delivery.

OKAY TO DRIVE: NOT RECOMMENDED (because idle and part throttle engine performance may be erratic).

Code 34 – MAP Sensor Signal Low (High Vacuum Indicated). This code is set if the ECM detects a lower than normal voltage signal coming from the MAP (Manifold Absolute Pressure) sensor. The MAP sensor outputs a low voltage (near one volt) with a high amount of manifold vacuum sensed. This code can be set if the vacuum line between the MAP sensor and intake manifold becomes pinched or restricted, or if the MAP sensor itself fails.

ACTION TAKEN BY ECM WHEN CODE 34 SETS: The ECM will substitute a fixed MAP value and use Throttle Position to control fuel delivery.

OKAY TO DRIVE: NOT RECOMMENDED (because idle and part throttle engine performance may be erratic).

Code 35 – Idle Speed Control Error. This code is set if the ECM has trouble getting the engine to idle at the desired speed. This code is most commonly set if there is a vacuum leak, or other issue, causing too much air to get into the engine, or if the IAC valve isn't working properly.

ACTION TAKEN BY ECM WHEN CODE 35 SETS: In some systems, the ECM may attempt to control idle by adjusting ignition-timing advance.

OKAY TO DRIVE: MAYBE (be aware idle speed may be erratic and the engine could stall if a load is suddenly put on it like turning on the A/C or the cooling fan kicking on).

Code 42 – Electronic Spark Timing (EST) Circuit Error. When the ignition control module is controlling timing directly (engine RPM at 400 or below), the ignition module grounds this circuit. When engine speed rises above 400 RPM, this circuit is ungrounded and voltage varies as the ECM takes over control of timing advance. The most common cause of this code setting is either a wiring problem between the ignition module and ECM, a defective ECM, or defective ignition control module.

ACTION TAKEN BY ECM WHEN CODE 42 SETS: The Ignition Control Module may not allow the ECM to advance ignition timing depending on the true cause of the problem – or normal ignition timing advance may be allowed and the engine may run fine.

OKAY TO DRIVE: MAYBE (depends on how the engine is running. If the engine is running poorly and/or lacks power, I would advise against driving it).

Code 44 – Exhaust Oxygen Sensor Indicates A Lean Condition. This code is set if the ECM detects lower than expected voltage coming from the O2 sensor. Any voltage lower than about 0.450 volts coming from the O2 sensor indicates that a lean Air/Fuel ratio is detected in the exhaust. This code can be set if the engine is running lean,

poorly, if there is an exhaust leak, if the O2 sensor is contaminated or defective, or if the O2 sensor signal wire is shorted to ground.

ACTION TAKEN BY ECM WHEN CODE 44 SETS: ECM will operate in open loop mode. Before this code sets, the ECM will be trying to richen up the fuel delivery to the engine until the programmed limit of enrichment is reached.

OKAY TO DRIVE: MAYBE (only if the engine seems to be running okay. Be aware that the conditions that can trigger this code can cause the engine to run overly lean or overly rich, depending on the exact cause).

Code 45 – Exhaust Oxygen Sensor Indicates A Rich Condition. This code sets if the ECM detects higher than expected voltage coming from the O2 sensor. Any voltage higher than about 0.450 volts coming from the O2 sensor indicates a rich Air/Fuel ratio is detected in the exhaust. This code can set if the engine is running rich, poorly, if there is an exhaust leak, if the O2 sensor is contaminated or defective, or if the O2 sensor signal wire is shorted to other wiring in the harness.

ACTION TAKEN BY ECM WHEN CODE 45 SETS: ECM will operate in open loop mode. Before this code is set, the ECM will be attempting to lean out the fuel delivery to the engine until the programmed limit of lean-out is reached.

OKAY TO DRIVE: MAYBE (only if the engine seems to be running okay. Be aware that the conditions that can trigger this code can cause the engine to run overly lean or overly rich, depending on the exact cause).

Code 51 – PROM Error. This code is set if the ECM cannot read the EPROM chip, or if the information on the EPROM chip appears, to the ECM, to be invalid.

ACTION TAKEN BY ECM WHEN CODE 51 SETS: ECM will operate in limp mode and engine may run poorly as a result.

OKAY TO DRIVE: NO (because the engine running poorly can cause damage to it, or can create an unsafe vehicle operating condition).

Code 52 – CALPAK Error (Faulty or Missing CALPAK). This code is set if the CALPAK IC chip(s) are missing, incorrect for the application, or cannot be read by the ECM.

ACTION TAKEN BY ECM WHEN CODE 52 SETS: The ECM may operate in limp mode and the engine may run poorly as a result.

OKAY TO DRIVE: NO (because the engine running poorly can cause damage to it, or can create an unsafe vehicle operating condition).

Code 53 – System Over-Voltage Error. This code is set if the battery voltage detected by the ECM is greater than 17 volts for more than 2 seconds (usually caused by a defective alternator).

ACTION TAKEN BY ECM WHEN CODE 53 SETS: The ECM may operate in limp mode and engine may run poorly as a result.

OKAY TO DRIVE: NO (because the engine running poorly can cause damage to it, or can create an unsafe vehicle operating condition, and the higher than usual voltage can damage electrical components in the car).

Code 55 – ECM Error. This code is usually only set if there is an internal problem detected by the ECM.

ACTION TAKEN BY ECM WHEN CODE 55 SETS: The ECM may operate in limp mode and engine may run poorly as a result.

OKAY TO DRIVE: NO (because the engine running poorly can cause damage to it, or can create an unsafe vehicle operating condition, and the higher than usual voltage can damage electrical components in the car).

Ryan Gick, NIFE Member
www.gmtuners.com